UK Local Authority engagement with the Energy Service Company (ESCo) model: key characteristics, benefits, limitations and considerations

Abstract

This paper outlines how some UK Local Authorities (LAs) have opted to engage with the Energy Service Company (ESCo) model in a bid to enhance their influence over local energy system change and help them to deliver on their political 'public good' objectives. Three common approaches to LA ESCo model engagement are outlined: 1) LA owned 'arms-length' model; 2) private sector owned concession agreement model; and 3) community owned and run model. The LA's decision to establish its own ESCo, or alternatively enter into a partnership with another, predominantly depends on: its willingness to expose itself to risk, the level of strategic control it desires and the resources it has at its disposal. However, the business case is contingent on the extent to which the national policy and regulatory framework facilitates and obligates LAs to play an active energy governance role. Stronger alignment of local and national energy agendas through communication and coordination between different governance actors could help to remove critical barriers to LA ESCo engagement and their wider energy governance activities.

Key words

- Local Authorities
- Energy Service Companies (ESCos)
- Local energy governance

1 Introduction

The challenge of governing wide-scale energy systems change has received growing attention in recent years in light of the threats posed by anthropogenic climate change, energy security and rising cost of energy (Smith, 2009; Bradshaw, 2010; Verbong and Loorbach, 2012), commonly known as the 'energy trilemma'. Whilst national government is typically the central energy governance actor in most countries, energy governance unfolds at multiple spatial scales and between a range of actors (Smith, 2007a). In this context, a number of scholars have highlighted the potentially important role local-level actors such as Local Authorities (LAs), businesses and community groups could play in managing the transition to a sustainable energy system (Bulkeley et al., 2010; Hodson and Marvin, 2010; Hawkey et al., 2013; Bolton and Foxon, in press.).

The UK energy system presents a particularly fascinating case with respect to sub-national energy governance, not least in terms of the role played by LAs. In the early 20th century LAs played an important energy governance role with many owning and operating municipal energy companies, however by the mid-20th century these powers were transferred to central government following a period of nationalisation. Subsequent periods of privatisation and liberalisation shifted power again, this time towards a handful of multi-national Energy Utilities, today commonly known as the 'Big Six'. These developments have culminated in a centralised, high-carbon energy system, which is predominantly owned and

managed by the private sector but overseen by national government through energy regulation.

In recent decades the structure of the UK energy market has offered few opportunities for LAs to play a leading energy governance role. However, the recent 'opening up' of the UK energy market under liberalisation, alongside mounting concerns around the 'energy trilemma', could create new opportunities for LAs to once again play an important energy governance role (CCC, 2012; DECC, 2013a). This move could also be driven by very low levels of satisfaction amongst customers of the 'Big Six' over recent years, who scored between 31-45% in 2014[1] (Which?, 2014). This situation has presented both customers and entrepreneurs alike with a compelling motive to identify more alternative energy solutions, which offer more attractive value propositions (Hannon, 2012; Hannon et al., 2013).

This paper draws upon two in-depth empirical studies conducted by the authors (Bolton, 2011; Hannon, 2012), incorporating 52 expert interviews and extensive documentary evidence, to examine how and why some LAs have in recent years made attempts to play a more active energy governance role in the UK. It focuses specifically on their engagement with the Energy Service Company (ESCo) business model, which is centred on providing customers with energy services; the physical benefit, utility or good people derive from energy (EU, 2006) (e.g. space heating). On the basis that the ESCo is being paid to deliver the final energy-related

[2] A detailed breakdown of the core characteristics of the ESCo model can be found in both Hannon (2012) and Hannon et al. (2013).

functionality their customers' desire, they are intrinsically incentivised to apply their expertise to ensure that the conversion process from fuel to energy service is achieved as efficiently as possible. This is because it is they who bear the cost of any associated inefficiency, not the customer. It is therefore characteristically distinct from companies who sell units of energy (e.g. gas, oil), where the customer is responsible for converting these into the energy services they desire, in turn bearing the costs of inefficient conversion (Hannon et al., 2013)[2]. Consequently, this model has been identified by various scholars as a potential means of fulfilling our energy needs in a more sustainable manner than at present (Vine, 2005; Fawkes, 2007; Hansen, 2009; Marino et al., 2011; Fang et al., 2012).

At present the UK is home to a relatively small ESCo market. A recent survey identified approximately 30-50 companies (Bertoldi et al., 2014), however only a handful of these will be owned by or closely affiliated with LAs. Some existing work has already helped to provide some valuable insights into why only a limited number of UK LAs have engaged with the ESCo model thus far (Smith, 2007b) or energy projects more broadly (DECC, 2013b; Hawkey et al., 2014), alongside some potential policy solutions. To complement this work the paper provides a detailed examination of: a) the different ways in which LAs have engaged with the ESCo business model in the UK; b) the key factors influencing the decision to opt for or against these approaches, primarily from the LA's perspective; and c) some policy

[2] A detailed breakdown of the core characteristics of the ESCo model can be found in both Hannon (2012) and Hannon et al. (2013).

and practical considerations for both local and national government associated with employing this local energy governance approach.

The paper is structured as follows. Section 2 presents a brief overview of the ESCo model. Section 3 explores the energy governance role UK LAs have played in past, how this is beginning to change and opportunities for additional work in this area. Section 4 outlines the paper's empirical methodology. Section 5 presents the main empirical results. Here we outline in detail the different ways in which UK LAs have developed and engaged with different ESCo models. Section 6 discusses some wider considerations for both LAs and national government in relation to LA engagement with the ESCo model. Section 7 presents the paper's conclusions and recommendations for future work.

2 Introduction to the Energy Service Company (ESCo) model

This section presents a brief introduction to the ESCo model to provide important context for the subsequent sections examining how and why UK LAs have engaged with this model.

An ESCo is an organisation that provides its customers with energy services, which relate to the physical benefit, utility or good people derive from energy (EU, 2006). These services are provided via long-term energy service contracts, normally lasting between 5 to 25 years, which fall into two broad categories; *energy performance contracts (EPCs)* and *energy supply contracts (ESCs)* (Fawkes, 2007; Sorrell, 2007; Hansen, 2009; Hannon, 2012). For the purposes of this paper we focus on ESCs considering that UK LAs have typically employed this type of contracting over EPCs

(Kelly and Pollitt, 2010; Hannon, 2012), normally as a means of delivering combined heat and power (CHP) district heating (DH) schemes.

EPCs involve the provision of *final energy services* (e.g. lighting, heating, motive power), which constitute energy streams that have been converted by secondary conversion equipment (e.g. radiators or fluorescent lighting) and can thus be enjoyed directly by customers, without the need for additional conversion processes (Sorrell, 2005; Sorrell, 2007). In contrast ESCos offering ESCs provide *useful energy* streams to their customers, such as hot water, coolant and electricity, which have already been converted by primary conversion equipment (e.g. a boiler, CHP plant etc.) but have not yet undergone secondary conversion. Here the customer is usually charged per unit of useful energy (Sorrell, 2007) or a fixed price for the supply of a pre-determined level of energy service (Marino et al., 2011). Figure 1 illustrates the space within which ESCos supplying ESCs work and how this is differentiated from the work of Energy Utilities and ESCos offering EPCs.

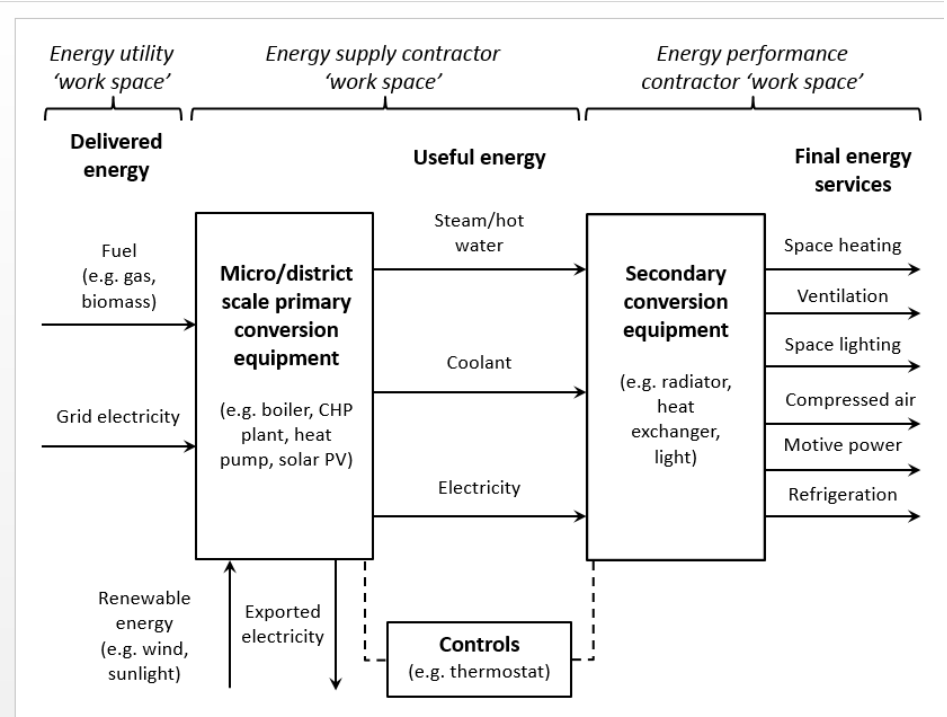

Figure 1: Typical 'work space' of Energy Utilities and ESCos (adapted from Sorrell, 2007)

During the period of the ESC the ESCo assumes control over the consumer's primary conversion equipment, as well as the distribution infrastructure. The ESCo uses this control to maximize the efficiency of the system in order to satisfy its consumer's energy needs at the lowest cost. This cost reduction is mainly achieved by reducing demand for delivered energy (i.e. imported fuel or electricity) through technical and operational efficiency improvements across both the primary conversion equipment and the distribution infrastructure (Sorrell, 2007). For example, many LA affiliated ESCos employ CHP generation technology as part of a DH system, which involves the simultaneous generation of electricity and heat from either gas or biomass sources. This approach can yield a 28% primary energy saving compared to traditional centralised forms of energy generation where heat is lost via cooling towers (Carbon Trust, 2010). Furthermore, by operating on a district-scale,

electricity transmission and distribution losses are reduced because it is generated so close to the point of consumption (Carbon Trust, 2010).

3 The changing energy governance role of UK Local Authorities, past and present

In this section we present an overview of how the energy governance role of LAs in the UK has evolved over the 20th and 21st centuries in the context of wider energy system changes, specifically referencing their engagement with the ESCo model. Following this we discuss how recent developments could open up new opportunities for LAs to play a more active energy governance role. Finally, we identify some opportunities for further research in this field, thus framing the contribution of this paper.

3.1 Brief history of UK LA energy governance

LAs have a long history of energy governance in the UK. According to Chesshire (1996) local, public electricity supply in the UK can be traced back to the 1880s with the establishment of numerous small-scale, municipal electricity companies. Simmonds (2002) estimates that following the Second World War approximately two thirds of the 560 electricity suppliers operating in the UK were publicly owned, many of which operated at the local-level. However, responsibility for energy supply was ultimately transferred away from a combination of local government and small scale privately owned utilities to national government following nationalisation in 1947-48. This resulted in the aggregation of these smaller companies into large, state controlled regional and national energy companies.

Consequently, 'for most of the post-war period, the [UK] energy sector was run by the state through integrated monopolies' (Helm, 2003 p.14).

The formation of the Conservative government in 1979 heralded a period of privatization during the 1980s and energy market liberalisation during the 1990s (Ekins, 2010; Pearson and Watson, 2012). This period of privatisation and market liberalisation led to the emergence of an entirely new constellation of energy actors in the UK, which included: private generators; transmission operators (TNOs); distribution network operators (DNOs); electricity suppliers and a market regulator (Ofgem) (Ekins, 2010; Jamasb and Pollitt, 2011). Most notable was the emergence of the small number of large, vertically-integrated Energy Utility Companies, known as the 'Big Six', which grew to dominate both generation and supply markets.

In contrast to this emergence of a centralised energy system governed principally by the UK government and a handful of companies, LAs have made some forays into the energy market in recent years, a trend captured by the excellent work conducted by Smith (2007b), Hawkey et al. (2013) and Hawkey et al. (2014). The latter report found that almost one third (30%) of the UK's 434 LAs are actively planning, and investing in, energy productivity and provision, signalling a healthy appetite amongst UK LAs to play an active energy governance role. They note however that much of this activity is at the aspirational and planning stage and that only 9% of UK authorities are showing evidence of significant numbers of energy project investments. Many of these have involved ESCos and incorporated a strong environmental, economic and/or social well-being dimension.

Not all of these projects have adopted the same approach however. Some LAs have established their own 'arm's length' ESCos, such as Enviroenergy (est. 1995) in Nottingham, Thameswey Energy (est. 1999) in Woking, and Aberdeen Heat and Power (est. 2002) in Aberdeen (Smith, 2007b; Hannon, 2012). Alternatively, some other LAs have signed concession agreements with large, private sector ESCos to deliver local energy projects via a 'special purpose vehicle'. Examples include London Borough of Tower Hamlets Council and EDF's partnership through Barkantine Heat & Power Company (BHPC) (est. 2000), Birmingham City Council and Cofely District Energy's[3] partnership through Birmingham District Energy Company (BDEC) (est. 2006) and Southampton City Council and Cofely District Energy's partnership through Geothermal Heating Company (SGHC) (est. 1986) (Smith, 2007b). In some other cases LAs have supported the work of community ESCos as in the case of Meadows Ozone Energy Services Limited (MOZES) in Nottingham (Hannon, 2012) and Kielder Community Enterprises Ltd in Northumberland (Northumberland National Park, 2014).

On the one hand the UK ESCo market appears to be experiencing balanced growth, increasing from approximately 20 companies in 2010 (Marino et al., 2010) to between approximately 30-50 in 2014 (Bertoldi et al., 2014) but only a fraction of these are closely affiliated with LAs. Additionally, the energy sector is still very much dominated by the Big Six Energy Utilities, accounting for approximately 95% of domestic energy supply in January 2014 (Ofgem, 2014), with combined Earnings

[3] A subsidiary of Cofely GDF Suez

before Interest and Tax (EBIT) of approximately $5.9 billion in 2012 (Ofgem, 2014)[4]. In contrast Marino et al. (2010) estimated the total value of existing energy service contracts in the UK ESCo market to be worth approximately $530 million per annum in 2010[5].

Despite the increasing trend towards privatization and liberalisation national government retains a central role in UK energy governance. Keirstead and Schulz (2010) explain that this can in part be explained by the wide range of tools national policy makers have at their disposal, such as direct service provision, setting general market conditions, regulating specific product standards and by encouraging desired behaviours through information and awareness campaigns. In contrast LAs are subject to greater restrictions in terms of energy governance than central government such as a lack of available investment capital and limited powers of taxation and regulation, meaning they tend to act only in a limited number of areas such as planning (subject to central guidance) or energy management within a council's own operations (OECD, 1995; Capello et al., 1999; EU, 2007; Keirstead and Schulz, 2010).

The situation in the UK for LA energy governance is quite different to some other countries, where they play a much more active energy governance role (Smith, 2007b). For instance both Sweden and Germany have a rich heritage of local energy

[4] Value have been exchanged and deflated to equal 2012 US dollars.

[5] This value is an estimate and includes both energy performance and energy supply contracts. See Section 2 for an explanation of how these differ.

planning where LAs have traditionally played a central role in 'rolling-out' decentralised technologies such as combined heat and power with district heating (CHP/DH) (e.g. Göteborg Energi in Sweden) and wind power (e.g. RheinEnergie AG Germany). However, some recent and emerging trends could change the energy governance role UK LAs play in the future.

3.2 Recent and emerging trends in UK LA energy governance

The move towards a more central energy governance role for UK LAs has received support from two national-level energy governance actors in particular. The first is the Committee on Climate Change (CCC)[6], which recently outlined in a recent report (CCC, 2012) that 'Local Authorities are well placed to drive and influence emissions reductions in their wider areas through the services they deliver, their role as social landlords, trusted community leaders and major employers, and their regulatory and strategic functions' (p.8). Whilst this sphere of influence stretches across key areas such as transport and waste, their influence is considered to be greatest in relation to the energy sector. The second is the Department of Energy Climate Change (DECC), who underlined as part of its recent Heat Strategy (DECC, 2013a) that 'Local Authorities are critical players in increasing the deployment of heat networks as they can create a supportive environment for the development of heat networks in their areas and support or sponsor specific projects' (p.50).

[6] The Committee on Climate Change (CCC) is a national body responsible for advising government on achieving its emissions reductions targets

This vein of political support has to some extent been translated into energy regulation designed to foster a more prominent governance role for LAs. For example, the Local Government Acts 2000 and 2003, and the Localism Act 2011, have provided LAs with the 'power of well-being', thus increasing their level of political autonomy not just over energy issues. These allow LAs in England and Wales to implement any policy they believe will promote the economic, social and environmental well-being of their area, unless explicitly prohibited by national legislation (CLG, 2009). In terms of energy governance specifically, central government repealed a clause in the 1976 Local Government Act in 2010 that had previously prohibited LAs 'from selling electricity which is produced otherwise than in association with heat [e.g. CHP]' (DECC, 2010 p.4).

Despite this apparent drive from central government to devolve energy governance power to LAs, the CCC (2012) highlights a number of ways in which UK government policy has undermined the prospects for LA energy governance. These include the:

- abolition of the Local Area Agreements (LAAs) and Local Authority National Indicators that required LAs to implement targets in relation to carbon emissions and fuel poverty, and report on their progress (CCC, 2012).
- disbanding of the Regional Development Agencies, who had a statutory role in contributing to sustainable development. Replaced by Local Enterprise Partnerships (LEPs) who may seek to achieve similar objectives but on a voluntary and predominantly self-funded basis.

- reduction in revenue funding from Government to Local Authorities, amounting to a 26% fall in real terms between 2010-11 and 2014-15.

The prospects for local energy governance have also been undermined by central government's reiterated desire to maintain a predominantly centralised energy strategy through its Electricity Market Reform (EMR), as incorporated in the Energy Act 2013. It is designed to facilitate large-scale investment in centralised electricity generation, such as nuclear energy, potentially at the expense of more innovative, system orientated energy solutions (Mitchell et al., 2011; Bolton and Hawkes, 2013).

In summary, whilst central government has moved to broaden the powers of LAs to play a more active energy governance role they have simultaneously introduced policies that reinforces the traditional centralised energy governance paradigm. Consequently, there is a need for further research in this area to provide insights into the characteristics, benefits and challenges of LA ESCo engagement to inform the design of future UK energy policy.

3.3 Opportunities for further work

Some valuable research has already examined these issues, most notably the work undertaken by Smith (2007b), DECC (2013b) and Hawkey et al. (2014) work. Smith's work presents a detailed overview of LA engagement with the ESCo model, the report is not based on an explicit empirical methodology, drawing more on experiential data. Also, the report does not explicitly present recommendations for supporting LA ESCo adoption, instead providing more of a 'snapshot' of drivers and

barriers at that time. Additionally, the report was prepared by a law firm and focuses predominantly on regulatory and legal issues at the expense of other types of drivers (e.g. infrastructure, user practices etc.). Finally, the report was published several years ago and the energy policy landscape has changed dramatically since then, meaning some of the findings are now out-of-date. In contrast DECC's and Hawkey at al.'s work represents a much needed systematic overview of LA energy engagement in the UK but does not deal explicitly with the characteristics, advantages and limitations of the different approaches to ESCo engagement, instead looking more broadly at LA engagement with energy projects, predominantly district heating.

In this context this paper aims to make a valuable contribution to the literature by presenting an up-to-date, detailed empirical investigation of how and why LAs have engaged specifically with the ESCo model (Section 5), to uncover the value and opportunities associated with this approach. In the following section we outline the methodology that is employed as part of the paper's empirical investigation.

4 Methodology

The results outlined in Section 5 relating to LA engagement with the ESCo model are drawn from the authors' PhD theses, namely Bolton (2011) and Hannon (2012). The scope of the investigation is limited to LA engagement with the ESCo model in the UK, focusing on both LA owned and run ESCos or LA partnerships with existing private sector or community ESCo. It also deals with just energy supply contracting and not energy performance contracting (see Section 2).

In total the authors conducted 53 semi-structured stakeholder interviews[7] between June 2010 and February 2012, each lasting approximately 1 hour long. Bolton conducted 17 interviews with LA personnel, as well as consultants, national policy makers and energy companies involved in the development of district heating networks. These interviews focused mainly on the wider energy (heat and electricity) policy and regulatory context influencing the development of sustainable energy distribution networks at the regional and local level in the UK. We draw on these interviews mainly for contextual and background information to help inform our discussion in Section 6.

Hannon's study involved a more specific examination of the different types of ESCos which LAs are engaging with and is the source material for the main empirical section of the paper (Section 5). This study began with an extensive review of academic, governmental, industrial and third sector literature on energy service provision and UK ESCo activity. This identified three main LA types of ESCo engagement, which were investigated in further detail via 36 in-depth semi-structured interviews with experts who possessed extensive experience of LA affiliated ESCo management and/or working alongside such ESCos, either in an operational (e.g. provision of financial, technical or legal expertise) or strategic capacity (e.g. design of ESCo related policy). Interviewees were invited to talk about

[7] A full list of interviewees is contained in Appendix A. Whilst the authors conducted a larger number of interviews that is listed in the appendix only those with direct relevance to the research questions posed in this paper are referenced.

the different ways in which LAs have engaged with the ESCo business model in the UK, as well as the rationale behind adopting these approaches from different perspectives and the wider issues relating to this local energy governance approach. The main empirical section of the paper draws various quotes from Hannon's study due to its specific focus on ESCos.

Instead of focusing exclusively on one or two case studies, the paper employs a more sector-level approach of LA ESCo engagement. A variety of individual LA ESCo cases are presented in Section 5 to illustrate the features and challenges facing each ESCo type, drawing upon a wide range of interviewees. These interviews were firstly transcribed by the respective authors before being analysed. This involved the authors categorising interviewees' responses manually into thematic categories to help 'make sense' of the data and identify emerging themes. This process was undertaken using transcription coding software, such as NVivo 8.

The ESCo study adopted a 'purposive sampling' strategy where, based on the initial document review, individuals were invited for interview who were identified as possessing a strong understanding of ESCo operation and/or working alongside ESCos, either in an operational (e.g. provision of financial, technical or legal expertise) or strategic capacity (e.g. design of ESCo related policy). Subsequently a 'snowball sampling' strategy was employed, whereby interviewees gave names of further appropriate interviewees (Black, 1999). On the basis of this a wide variety of energy service market stakeholders in the UK were invited for interview,

representing a wide variety of professional backgrounds and expertise (Appendix A).

Given the relatively small size of the interviewee sample compared to the number of UK ESCo sector employees, it is inappropriate to draw generalizations from the outputs of this study. Instead, the empirical investigation constitutes a qualitative exploratory study, intended to provide valuable insights into the types of characteristics, benefits and challenges associated with LA ESCo engagement. The interviews are used to illustrate common themes that emerged from the interviewees' respondents and triangulated with publically available reports where possible to provide further underpinning evidence. Given these methodological limitations we present a number of recommendations in Section 7 for future work that could complement and expand upon the research presented in this paper.

5 UK Local Authority approaches to ESCo model engagement

In this section we draw upon empirical evidence to explore how and why LAs have engaged with some of these different ESCo models in an effort to govern local energy system change. We examine the ESCo variants in the following order: 1) LA owned 'arms-length' model; 2) private sector owned concession arrangement model; and 3) community owned and run model. For each variant we present the key characteristics of these arrangements, alongside the factors that have either encouraged or discouraged LAs from choosing to adopt these approaches over others. At the end of each sub-section we present a table summarising these points for each of these variants.

5.1 Local Authorities and the Local Authority owned 'arms-length' ESCo model

5.1.1 Overview of arrangement

An LA 'arm's length' ESCo is a separate legal entity from the LA but which is typically wholly owned by it and exists to fulfil strategic objectives that are in line with the council's wider political objectives. These are often established as companies either limited by shares or by guarantee that operate a 'non-for-profit' model whereby any profits generated are recycled back into the running of the company, rather than distributed to shareholders or investors. In the UK these types of companies have tended to supply heat, electricity and to a lesser extent cooling via CHP/DH schemes. Notable examples in the UK include Aberdeen Heat & Power, Enviroenergy in Nottingham and Thameswey Energy Limited (TEL) in Woking.

These types of ESCos tend to operate exclusively within the LA's borough and thus at a relatively small scale. However, it is possible for them to operate outside the LA's borough as evidenced by TEL who recently expanded their operations beyond Woking and into Milton Keynes (approximately 65 miles away). Additionally, these ESCos are typically owned and operated exclusively by the LA but in some instances they might be established as a joint-venture and be part-owned by a private sector partner. For instance, ownership of TEL in Woking was initially split between Woking Borough Council (81%) and Xergi (19%), a CHP specialist but has since become entirely owned by Woking council (Smith, 2007b).

Figure 2 outlines the main actor partnerships and resource flows in this type of LA ESCo arrangement.

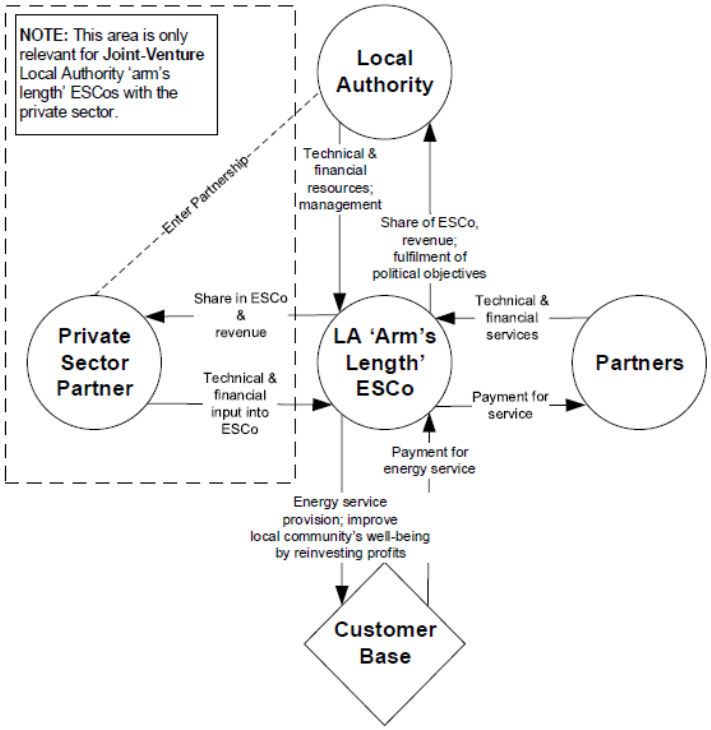

Figure 2: Local Authority 'arms' length' ESCo (Hannon, 2012)

5.1.2 Factors influencing LA decision to engage with this model

The Managing Director of one LA ESCo explained that the key reason behind an LA establishing its own ESCo is that it can '*provide public benefit through private sector mechanisms*' (*Interview 4*), thus constituting a private sector vehicle that help the LA deliver on its political objectives (e.g. reduce fuel poverty, mitigate climate change, improve local economy etc.). Proponents of this ESCo model that were interviewed cited the fact that the council owns and manages the ESCo, offering the LA a significant degree of control over the types of energy projects that will be delivered in the local area, and potentially affording it greater control over how it can fulfil its objectives (Interviews 4, 15 & 48). This was highlighted by the head of sustainable development at one LA:

'Rather than a simple contractual relationship [with a private sector ESCo], it gives us more leverage in terms of achieving other objectives and outcomes' (*Interview 15*)

A number of interviewees (Interviews 2, 4, 7, 15, 40 & 48) highlighted that a key strength of this approach is that the ESCo operates a 'not-for-profit' financial model, which one central government energy policy advisor explained involved profits being *'recycled back into the system to either upgrade a project or help it deliver others'* (*Interview 44*). In cases such as TEL in Woking, the LA has benefited from the payment of interest on loans made to its ESCo, which amount to approximately £1 million per annum (Interviews 2, 4 & 7). This revenue stream is fed into the sum total of funds available to the LA to support its activities, helping the council to deliver projects it might have otherwise not had the funding for. Research by the New Economics Foundation argues that because these profits are reinvested into projects in the local area, they also contribute to the *multiplier effect*, where each pound spent locally stimulates considerably more local economic growth than if it were spent elsewhere (New Economics Foundation, 2005). An energy 'think tank' specialist discussed how local ESCo projects can contribute to this effect:

'Profits from the energy system are retained, shared, distributed and used locally [so] you can probably see a measurable increase in the local economy as a result of that. Because if your profits are going to New York and Paris [they're not] being spent locally' (Interview 40)

Because the ESCo is owned by the LA, but is also a separate private sector entity, it is able to raise finance from both private *and* public sectors to fund its energy projects. A number of interviewees highlighted how this arrangement opens up greater opportunities to secure the necessary finance to deliver low carbon projects (Interviews 1, 3 & 4). For example, TEL has been able to raise money from private sector financiers such as Lombard North Central Plc. (TEL, 2013), whilst at the same time loaning money through Woking Borough Council who have sourced this from the Public Loan Works Board, which lends money from the National Loans Fund to LAs and other public bodies.

A number of the interviewees (Interviews 3, 47 & 48), as well as a book chapter written by the executive director of TEL in Woking (Thorp, 2011), highlighted that an important benefit of establishing the ESCo as a separate legal entity is that it possesses greater freedoms that if it were attached to the LA. For example, in the TEL case the ESCo manages its budgets autonomously and is therefore less vulnerable to cutbacks in public expenditure than the LA. Similarly, it is less vulnerable to changes in 'political mood' that might interrupt its activities if it were part of the LA. For instance, the Managing Director of one LA ESCo explained that these ESCos can '*have business plans that are 25-30 years long'* and are therefore *'able to take losses in years going forward, which the council couldn't carry on its books'* (*Interview 4*). This means that the LA can develop energy projects with a longer term perspective than would have otherwise been possible because *'business plans transcend the democratic cycle'* (*Interview 4*), which typically only

last for 12 months when the local elections take place. The LA may also take credit for any successful projects delivered by its ESCo, which could afford it greater levels of legitimacy with respect to energy governance. This could mean that other energy actors (e.g. consumers, investors etc.) are more willing to accept the LA's decisions on key energy issues. However, this can work both ways and if the LA's ESCo projects are unsuccessful then this will damage its public image and potentially its finances. Importantly, the LA can enjoy these kinds of benefits whilst being insulated from much of the associated financial risk associated with delivering energy service contracts. As the Head of Sustainable Development at one LA explained, because the ESCo constitutes '*a separate legal entity, if its business failed, then it would be that which failed, not the [Local Authority]'* (*Interview 15*).

Despite being insulated from some of the direct risks associated with business failure by employing this approach (e.g. insolvency), the LA is still exposed to a variety of financial, technical and political risks: *financial* in relation to the repayment of loans the LA may have made to the ESCos, *technical* in that the LA often relies upon its ESCo to satisfy its own energy needs, and *political* on the basis that if the ESCo is deemed a failure by the local electorate that they may lose votes in forthcoming elections. These risks are noted by a legal expert in the area:

> *'You take a lot of risk…If it all goes wrong, there is no private sector provider to turn round and say 'you have messed this up, we will get rid of you and replace you with somebody new'* (*Interview 48*)

One LA ESCo manager explained that due to these risks many LAs choose not to establish an 'arm's length' ESCo because they are typically *'very conservative…very risk adverse [and] not necessarily that keen on innovation'* (*Interview 3*). Additionally, LAs are not typically incentivised by regulation to deliver energy projects, such as the absence of city-level GHG emissions reduction targets or Local Authority National Indicators for tackling carbon emissions and fuel poverty. Therefore, many LAs believe sustainable energy initiatives sit outside their remit. Even if the LA is willing to deliver such projects through its own ESCo it may lack the necessary financial and technical resources to establish and operate an ESCo. However, 'political will' was considered to be the most important criterion by a Chief Executive of one council that had established its own ESCo:

> *'There needs to be the will in place…You can buy the technical and administrative capacity but you cannot buy the will to do it…the dream, the aspiration to do something. If there is a will, there is a way'* (*Interview 17)*

If the LA is risk adverse but still keen to deliver local energy initiatives, it may instead opt to establish a joint-venture arrangement with a private sector partner (see Section 5.1.1) as a means of spreading the risk associated with the ESCo's project and a way of harnessing the resources to deliver these projects. Alternatively, the LA may want to avoid ownership altogether, in which case it might opt to sign a concession arrangement with a private-sector ESCo (Section 5.2) or support a community-led ESCo (Section 5.3). Before discussing these ESCo

models in more depth we summarise the key points discussed in this sub-section (Table 1).

Table 1: Summary of key characteristics, benefits and limitations of the LA owned 'arm's length' ESCo model from the LA's perspective

Characteristics	Rationale for engagement	Potential limitations	Examples
• Wholly owned by the LA, unless a joint-venture with a private sector partner • 'Not-for-profit' financial model where profits are recycled into future LA initiatives • Operations typically limited to the local area	• Activities are specifically tailored to help LA deliver on its political objectives • ESCo is a separate legal entity thus insulating LA from majority of risk associated with its operations • Can develop long term energy strategies • Additional revenue stream to support its operations • Finance can be raised from public and private sectors • Successful projects provide LA with greater legitimacy as energy governance actor	• Scope of projects normally limited to LA's borough • Still exposed to some financial and technical risk • LA may lack necessary resources, experience, expertise and/or political will to 'start up' and operate an ESCo • Unsuccessful projects could undermine the LA's legitimacy on managing key energy issues	• Aberdeen Heat & Power • Enviroenergy (Nottingham) • Thameswey Energy (Woking) • Thameswey Central Milton Keynes

5.2 Local Authorities and the private sector owned concession agreement ESCo model

5.2.1 Overview of arrangement

As an alternative to establishing its own ESCo LAs may contract with an existing private sector ESCo, often referred to as an Energy Services Provider (ESP), as part of a concession agreement. Here the LA grants the ESP permission to *'design and build, and...if possible, to finance, and then operate and maintain the scheme'*

(Interview 48), as one legal expert explained. It typically involves the LA transferring responsibility to the ESP to supply energy services (e.g. heat) to a body of consumers for which it has a legal responsibility to satisfy the energy needs of, such as council owned housing, libraries, leisure centres etc. In these situations the ESP may establish a Special Purpose Vehicle (SPV), which is a separate company specifically set up to oversee all aspects of the development of a specific energy system (e.g. CHP system and network) within a specific geographic location.

Examples include Birmingham City Council's concession agreement with Cofely District Energy[8] , a subsidiary of a large French multi-national energy company Cofely GDF Suez, to deliver a district heat system on their behalf in Birmingham. In turn Cofely established Birmingham District Energy Company (BDEC) Ltd, an SPV responsible for the 'design, build, finance, own and operate sustainable district energy schemes across Birmingham' (DEKB, 2012). Cofely has established very similar schemes with Leicester, Coventry and Southampton city councils (Cofely, 2014).

Figure 3 outlines the main actor partnerships and resource flows in this type of LA ESCo arrangement.

[8] Formerly known as Utilicom

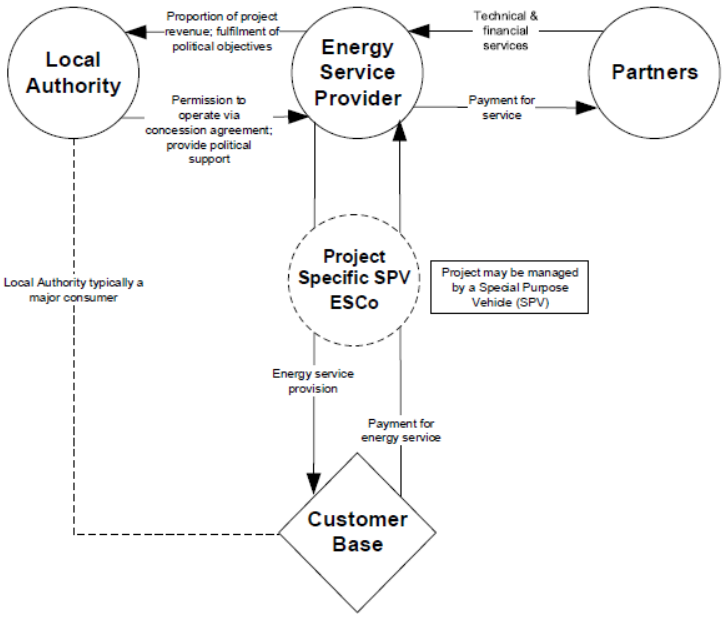

Figure 3: Private sector owned concession agreement ESCo model (Hannon, 2012)

5.2.2 Factors influencing LA decision to engage with this model

LAs may contract with a private sector ESCo if it acknowledges the benefits of delivering a certain type of energy project within their local area but is unwilling to establish its own ESCo because it doesn't want to absorb the associated risks or lacks the necessary technical expertise, financial resources and political will to do so (Interviews 4, 17, 20, 44 & 48). This was neatly summarised by one legal expert on ESCo contracts who explained that such an arrangement might arise if: *'the public sector says 'we don't really want do this but we want it to be done' (Interviewee 48).*

The *quid pro quo* however is that the LA sacrifices some degree of control over the local energy system to another party (i.e. the ESP), compared with the LA ESCo approach (Interviews 2, 20 & 48). In the words of one legal expert, the LA may *'no*

longer necessarily be the master of its own destiny any more' (*Interviewee 48).* This can have the effect of diminishing the LA's ability to deliver on its long term political goals, particularly those associated with reducing fuel poverty. This is because as one economist explained that *'if the ESCo is fundamentally there to give a rate of return to investors of 15%, it might only go for the very high value and dense customer base* ones' *(Interview 41)*. Consequently, as a purely commercial entity the ESP will tend to prioritise projects that promise high returns, such as large scale, mix-use schemes with strong economies of scale and a balanced demand load, over smaller projects that may promise lower returns but with a stronger environmental and/or social welfare dimension.

Extending the logic of the interviewees who underlined the value to the local area of recycling energy profits via a wholly owned LA ESCo (Interviews 2, 4, 7, 15, 40 & 48), one key disadvantage of partnering with a private sector ESCo is that a significant proportion of the energy project revenue will not be captured by the LA. In some cases 100% of the profit generated might be channelled to the ESP but in others the LA will receive a proportion of the revenue. One senior low-carbon energy consultant explained that whilst:

> *'They are professionally established and they will understand the risks better but the disadvantage with that is that they take all the profit unless you can have some sharing arrangement' (Interview 39)*

However, the LA can receive some proportion of the revenue through this arrangement, albeit typically a small proportion of the project's profits. For

instance, in the case of Birmingham 'the first 5% of BDEC's profits are taken to pay Cofely's costs, and subsequent profits are split 50:50 to Cofely, and to partnership board members in the form of an energy rebate' (Hawkey et al., 2013 p.25), which includes Birmingham City Council.

From the ESP's perspective, there are obvious benefits to contracting with LAs on a concession basis. Firstly, concession agreements limit the number of ESCos operating in the local area, thus reducing the number of competitors to the ESP and in turn limiting the risk it is exposed to. Secondly, the LA can help to promote the ESP's schemes in the area, as has been the case in Birmingham with Birmingham City Council and Cofely. Thirdly, LAs typically occupy large buildings in or close to city centres, which have high levels of energy demand. This means the ESP can usually capture better economies of scale in terms of servicing a large and dense energy load and by having to negotiate with multiple customers occupying smaller sites. This helps to reduce their transaction costs and make the energy service project more financially viable. Additionally, public sector organisations are also attractive to ESCos because they are financially backed by government; *'the public sector never goes bust'* (*Interview 47*)*,* as explained by one district heat expert. This provides the ESCo with confidence that the majority of its customers will be able to repay their debts on schedule, helping to reduce the cost of finance available to them as it provides investors with greater confidence that the ESP's debts can be repaid.

In these cases LAs are often important 'gatekeepers' to opportunities in the local area, particularly in terms of town planning and so partnering closely with an LA is often a prerequisite for delivering local energy projects, as noted by one low-carbon consultant:

> *'Joint ventures are quite typical in things like district heating projects, where…it requires Local Authorities in most cases to unlock development opportunities, whether that's laying district heating pipes, planning policies, getting access to supplies' (Interview 39)*

This helps to emphasise that even though an LA may not own and operate the assets directly, they still remain key enabling actors for this type of ESCo to succeed. Before discussing the third and final ESCo model, we summarise the key points made in this section in Table 2.

Table 2: Summary of key characteristics, benefits and limitations of the private sector owned concession agreement ESCo model from the LA's perspective

Characteristics	**Rationale for LA engagement**	**Potential limitations**	**Examples**
• A large private sector ESCo, operating a 'for-profit' financial model. • Concession agreement established between ESP and LA • SPV typically established to manage the project	• Private ESCo assumes majority of the risk associated with delivering energy projects that can meet *some* of the LA's political objectives • Provides any lacking expertise, experience or resources LA might be lacking to deliver energy projects	• Sacrifice majority of control to private sector ESCo • Compromise between LA's and private ESCo's objectives • Private ESCo takes a significant share of the project revenue, which is typically redirected outside local area	• Cofely GDF Suez – Southampton City Council • Veolia – Sheffield City Council **Special Purpose Vehicles** • Birmingham District Energy Company Ltd (Cofely GDF Suez owned) – Birmingham

			City Council • Barkantine Heat & Power Company (EDF owned) – Tower Hamlets Council • Southampton Geothermal Heating Company Limited (Cofely GDF Suez owned) – Southampton City Council

5.3 Local Authorities and the community owned and operated ESCo model

5.3.1 Overview of arrangement

A community owned and operated ESCo is established by a group of individuals or a civil society organisation in order to deliver energy service projects that help to satisfy the energy needs of the local community, whilst also realising a set of wider objectives (e.g. self-sufficiency, alleviation of fuel poverty, local economic growth etc.). These ESCos can take a variety of legal forms, including *community interest companies* (CICs); *industrial and provident societies*; *private companies limited by guarantee; unincorporated associations; trusts;* and *private companies limited by shares*. They typically deliver very small-scale energy service projects given the specific focus on a small community area and the limited resources at its disposal. Examples include Meadowside Ozone Energy Services (MOZES) in Nottingham, Douglas Community EcoHeat, in South Lanarkshire, Woolhope Woodheat, in South Herefordshire, and Kielder Community Enterprises Ltd in Northumberland.

Figure 4 outlines the basic structure of this model, illustrating how LAs can play an important role in providing the skills, resources and political support required for to establish and operate a community ESCo. In return the LA may receive financial

payment for these services, or more likely 'payment in kind' as the community ESCo serves to improve the well-being of the local community, which will be to the benefit of the LA.

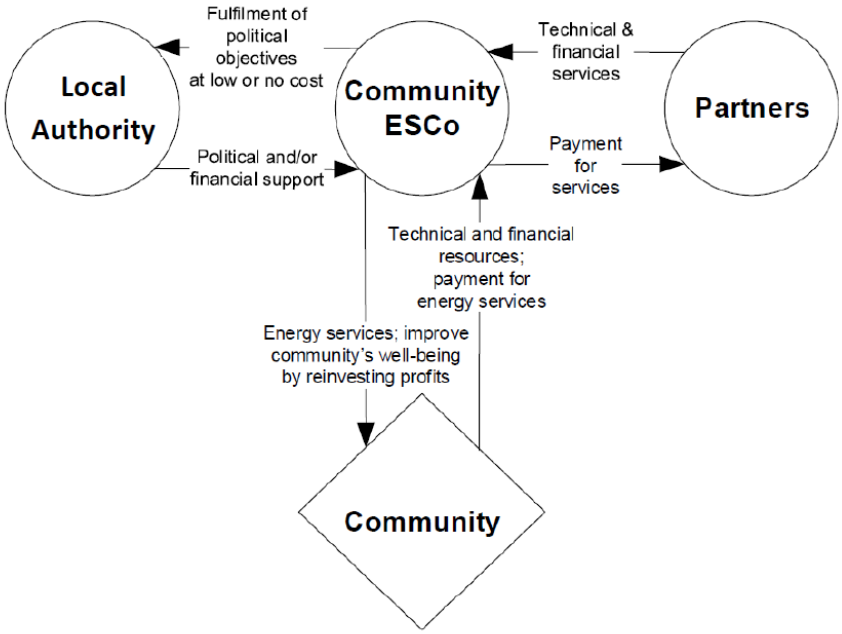

Figure 4: Community owned and run ESCo (Hannon, 2012)

5.3.2 Factors influencing LA decision to engage with this model

Many of the individuals interviewed in relation to this model stressed the community benefits of empowering local people to deliver energy projects at the local-level (Interviews 18, 34-37, 44, 47-48). As evidenced by the following quote from a CHP expert who works with community ESCos, the transfer of energy governance responsibilities to the community can be understood as a reaction from some people to centralised energy generation paradigm and the dominance of the 'Big Six':

'At the moment, energy is just something that is done to people but actually giving them control over the local generation, distribution and supply of electricity empowers that community' (Interview 47)

A community owned and run ESCo, by its very nature, is controlled by groups and/or civil society organisations and not the LA. This is unlikely to prove to be an issue considering that the political objectives of both the community and the LA are often closely aligned given their shared interest in improving the quality of life in the local area. However, alignment is not guaranteed and important differences may exist between their agendas leading to direct conflict between these two bodies' governance efforts.

This situation can be illustrated by the case of Meadows Ozone Energy Services Limited (MOZES), a community ESCo in Nottingham, which in 2009 installed 67 roof-top photo-voltaic (PV) systems throughout the Meadows area, the vast majority of which were free of charge to residents. Whilst MOZES and Nottingham City Council have a history of working towards similar energy related objectives, most notably reducing carbon emissions, fuel poverty and self-sufficiency, they have shared a difficult relationship at times. The first issue, highlighted here by one

community ESCo committee member, was that the LA already had responsibilities to support its own LA 'arm's length' ESCo, called Enviroenergy[9]:

> *'They were a bit sceptical about how far they could support [our project] because they were locked into this contract with Enviroenergy' (Interview 35)*

Therefore, the council's political support was channelled mostly towards its own ESCo rather than MOZES. The other was that the LA had proposed a Private Finance Initiative (PFI) project in the Meadows that would have involved the re-development of a number council houses in the area. This created a significant obstacle to MOZES' plan to roll-out PV systems across the community project, which was predicated on installing these on the existing housing stock. However, as time has passed the two bodies have recognised the significant overlap between their objectives and have made a concerted effort to work together towards shared objectives (Interviews 34 & 35). For instance, one of the LA's Councillors now sits on MOZES's board to provide advice on its current and future operations in a bid to help align the two organisations' objectives.

If there is a strong degree of alignment between the both the community ESCo's and the LA's political agendas then the LA may benefit by avoiding the need to

[9] EnviroEnergy is an autonomous company wholly owned by Nottingham City Council that provides heat and power, sourced from burning municipal waste, to homes and businesses across Nottingham via a district heating system.

commit its own resources to deliver similar activities. Furthermore, project delivery through the community ESCo could prove more effective in the sense that they can help to involve citizens to help deliver energy projects, as explained by one community ESCo director *'the enthusiasm of people and the strength of the community'* was an extremely valuable resource because it meant that *'when you need to get numbers of people to do something, then you can get that done' (Interview 33)*.

From the community ESCo's perspective, LA support can be critical given the limited resources often at their disposal, be it financial, technical or political. Financial support can help to provide the necessary resources to deliver these projects. For example, Kielder Community Enterprises Ltd in the north east of England received in excess of £30,000 to deliver its district heat scheme from Northumberland County Council given the benefits it would provide to both the local environment and economy (Northumberland National Park, 2014). This financial support can enable community ESCos to hire technical support and thus alleviate their *'reliance on volunteers' time' (Interview 33)*, as explained by one Community ESCo Director. Political support is also essential, for example MOZES benefitted from the support of the local MP at the time, who gave the ESCo an important voice within key political circles and a number of important contacts that helped aid its development.

Table 3 summarises the key points discussed in this sub-section.

Table 3: Summary of key characteristics, benefits and limitations of the community ESCo model from the LA's perspective

Characteristics	Rationale for engagement	Potential limitations	Examples
• Community owned and run • Activities focused on a community area • Typically possess limited resources	• LA and ESCo's objectives likely to be well aligned given shared concerns about local community's wellbeing • LA can avoid committing resources if projects are aligned with their own objectives • Community action can harness community activism • Community support can help to avoid local opposition	• LA has little control over ESCo's actions • Objectives of LA and community ESCo not necessarily aligned • ESCo's activities tend to be limited to the community area rather than the wider borough • Limited resources and typically very reliant on the support of key partners such as the LA	• Meadowside Ozone Energy Services (MOZES) in Nottingham • Douglas Community EcoHeat, in South Lanarkshire • Woolhope Woodheat, in South Herefordshire • Kielder Community Enterprises Ltd, in Northumberland

6 Policy and practical considerations associated with Local Authority engagement with ESCo model

Based on the results of the empirical investigation (Section 5), this section considers some of the wider issues and policy implications from a LA perspective relating to engagement with the ESCo model.

6.1 Trade-offs between Local Authority ESCo engagement approaches

From the perspective of the LA, engaging with the ESCo model presents a means of influencing local energy system change that is concomitant with their political objectives. However, an important trade-off exists between the extent to which the LA exposes itself to the risks associated with delivering energy projects on the one

hand and how much control it is able to exert over local energy system developments on the other.

If an LA is willing to accept the majority of the financial and operational risks associated with owning and operating its own 'arm's length' ESCo then it will be rewarded with a significant degree of strategic control over local energy project developments and the revenue they generate, as in the cases of Woking and Aberdeen (Section 5.1). In contrast, whilst some LAs might appreciate the value of controlling such development, they are risk adverse and thus unwilling to expose themselves and their electorate to the risks associated with the project, such as poor performing assets, rising gas prices or unexpected reductions in energy demand. As an alternative these LAs may opt to transfer responsibility to a private sector ESCo via a concession agreement, as employed in Birmingham and Southampton for example (Section 5.2). Another option would be to endorse and actively support the activities of a community ESCo rather than establish their own, such as in Nottingham or Kielder (Section 5.3).

Whilst contracting or collaborating with an existing ESCo can reduce the LA's exposure to investment and operational risk compared to establishing its own, the trade-off is that the LA sacrifices much of the strategic control over the ESCo's activities to another organisation. For instance, a private sector ESP will typically prioritise the most financially profitable energy projects, whilst a community ESCo will prioritise 'public good' objectives that are specific to their community rather than the wider population of the town or city they reside in. In both cases the LA

risks projects being delivered in its local area that are either not entirely in-keeping with their objectives, or worse, are in direct conflict with them. The concession agreement between the LA and the ESCo, as employed in Birmingham for example, seeks to guard against this by clearly stating the responsibilities of each of the partners and how they will benefit from the scheme as part of a contract. However, the arrangement is likely to be more informal between an LA and a community ESCo, and thus potentially more problematic.

The LA's decision to adopt one of these approaches over the others will largely depend on how it interprets and intends to respond to the energy 'trilemma'. If for example long term social and environmental objectives, such as carbon reductions and reducing fuel poverty are prioritised as in Aberdeen and Woking, it is likely that the arm's length model will be deemed optimal. This is because the LA can exert long term strategic control over the ESCo and deliver energy projects across the city that are driven not just on commercial terms but also 'common good' objectives. On the other hand if short term concerns around funding and catalysing economic development through private investment are the LA's main priorities then the private sector concession model might be preferred or a partnership with a local community ESCo.

6.2 Aligning national and local political agendas

Whilst LA support can really bolster the business case for local-level ESCo activity, it is very much dependent on a supportive national regulatory framework (DECC, 2013b; Hawkey et al., 2014). Although not the subject of this particular study, we

note that many of the interviewees expressed frustration at what they perceived to be a regulatory framework that offered relatively little support for decentralised energy (Interviews 3, 15, 17, 18, 20 - 21, 40, 47). This coupled with the uncertainty over the UK government's commitment to the climate change agenda, and associated low carbon energy policies, was considered detrimental to growth in the UK LA ESCo market. This is because ESCos generally operate on the basis of long term contracts and thus swift, unexpected changes in their operating environment may have detrimental effects on their business case (Interviews 19, 20, 33 & 36).

The business case for local-level ESCo activity is heavily dependent on the wider market and regulatory framework and low carbon policies put in place by central government. Legislative commitments such as long-term carbon reduction targets (e.g. Climate Change Act), and specific energy policies such as long-term financial incentives for low-carbon energy generation (e.g. Feed in Tariff, Renewable Heat Incentive), capital grant schemes (e.g. Low Carbon Communities Fund), and energy efficiency obligations (e.g. Energy Company Obligation) are normally critical to the successful operation of an ESCo providing energy supply contracts (Hannon, 2012; Hannon et al., 2013). Clearly uncertainty over the long term future and direction of these policies may undermine ESCo revenue streams in the future.

One example of a national-local misalignment, which has previously been elaborated in Bolton and Foxon (2013), is how operators of smaller scale CHP plants often find the transaction costs associated with selling electricity into the national wholesale electricity market (called BETTA) to be inhibitive. One LA chief executive

explained that the current market structure is biased towards the need of large-scale Energy Utility companies, arguing that: *'the rules are written for them'* and that *'the transaction and membership costs are inhibitive' (Interview 17)*. Their colleague, a managing director of the LA's ESCo, explained that to enter the electricity market to trade their electricity and that *'it would cost us £500,000 minimum to join that pool...far too much as a small supplier' (Interview 4)*. This issue is not confined to the Woking case as a number of ESCos throughout the UK have invested in costly private wire networks that link an ESCos to customers demanding electricity. This is of course a costly capital intensive solution, but one which a number of ESCos judge to be more efficient in terms of revenue generation than transacting in the national markets.

Other examples of poor alignment of national and local policies highlighted by the interviewees included the removal of carbon reporting obligations following recent changes to Local Authority National Indicators, as well as the lack of any government directive for the development of local low-carbon strategic plans (Sections 3.2 and 5.1.2). Despite this lack of impetus from central government, some LAs are already implementing low-carbon strategies, high profile examples include the Greater London Authority's Climate Change Mitigation and Energy Strategy (GLA, 2011) and Woking Borough Council's Climate Change Strategy (WBC, 2012). However, these represent only a small number of leading councils and the lack of obligations and guidelines on how to develop and implement strategies

means that these promising developments are likely to remain the exception rather than the rule.

Clearly there is a need for further research to explore ways to improve the multi-level governance of energy in the UK. We point to an interesting proposal recently made by Bale et al. on the formation of a 'Strategic Energy Body' (SEB) at the municipal level (Bale et al., 2012). The SEB constitutes a forum for city-regional stakeholders to co-develop plans that take advantage of local renewable energy and carbon reduction opportunities in a coordinated fashion. As Figure 5 illustrates this body could also act as an umbrella institution for the LA's own ESCo but could equally help to coordinate energy initiatives being delivered by other organisations, such as private sector ESCos and community groups. Such a body could therefore help to avoid situations as witnessed in Nottingham where the objectives of the LA's own ESCo were not initially aligned with MOZES's, a community ESCo, which led to some degree of political wrangling. Building upon a well-coordinated local energy agenda, the SEB could act as an important interface between the local and national energy stakeholders, such as LAs and central government. Further work is of course required to examine how such a proposal could be implemented in practice and the challenges and opportunities that this presents.

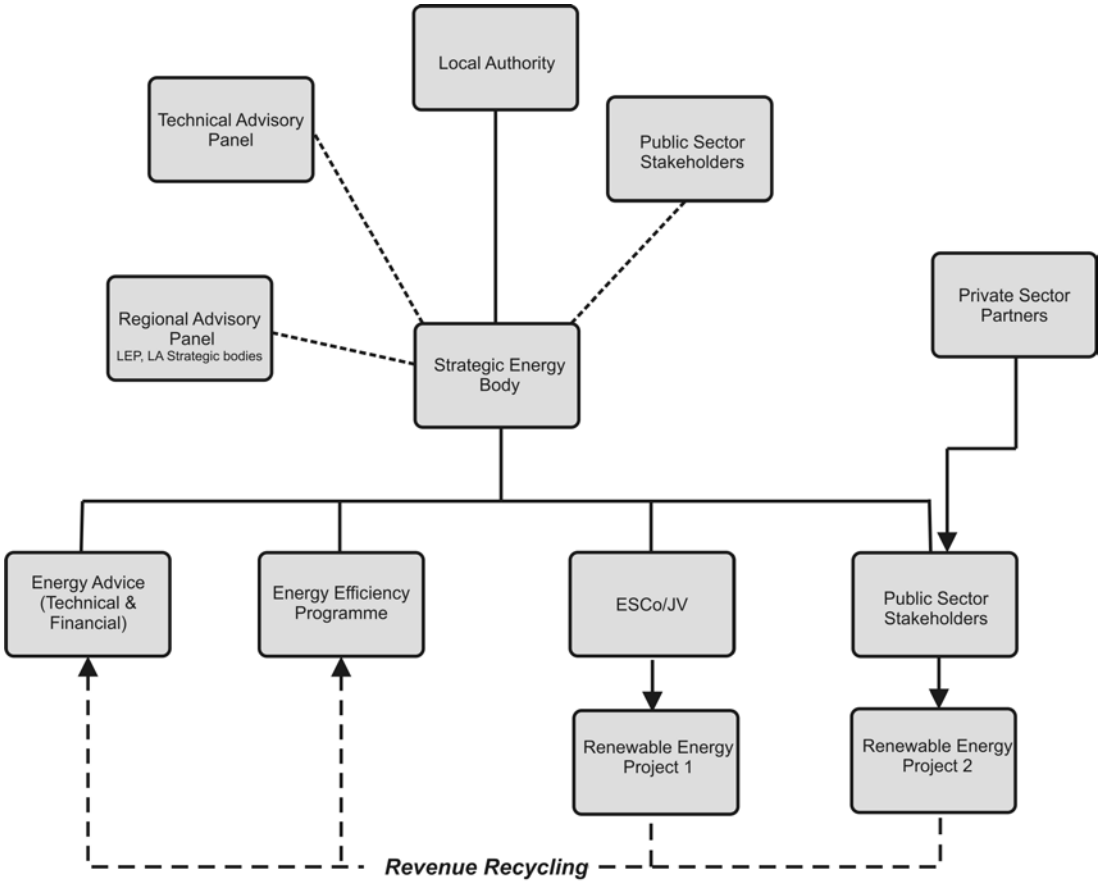

Figure 5: Proposed model for a city Strategic Energy Body (reproduced from Bale et al., 2012)

7 Conclusions

The overarching argument developed in the paper is that in the new context of a liberalised UK energy, and growing concerns around the 'energy trilemma', some LAs are entering the energy market via innovative business models in a bid to help them perform a more active energy governance role. This move stems from a desire amongst some LAs to shape local energy system developments in a way that enables them to deliver on their political 'public good' objectives, such as tackling fuel poverty or improving the local environment. Consequently, a variety of novel actor configurations between public, private and third sector organisations have started to emerge. This move towards multi-actor local governance systems is

nuanced from the pre-war tradition of municipal ownership of local energy infrastructure and all-together different from the highly centralised, market-led governance approach that prevails today in the UK.

This paper examines LA engagement with the ESCo model and identifies three common ways in which LAs in the UK have engaged with it: 1) establishing its own 'arm's length' ESCo that is owned and operated by the LA; 2) entering into a concession agreement with an existing private sector ESCo to deliver local energy projects; and 3) partnering with a community ESCo that shares similar objectives to improve the well-being of the local community. All three approaches have their own merits and limitations from the perspective of both the LA and its respective partners. Broadly the decision for an LA to establish its own ESCo or enter a partnership with a private sector or community ESCo will ultimately depend on the LA's willingness to expose itself to risk, the extent to which it wants to retain strategic control over local energy system change, the resources it has at its disposal and the extent to which it is committed to tackling the UK's 'energy trilemma'.

A number of important policy and practical considerations for both local and national government in relation to LA ESCo engagement are highlighted by this research. The first is that should an LA opt against establishing its own ESCo, due to the associated financial, technical and political risks, and instead collaborate with a private sector or community ESCo, it should be prepared that it will wield less control over local energy system developments given that substantial governance

powers are transferred to these other stakeholders. Furthermore, this approach carries its own form of political risk because these stakeholders may deliver local energy projects that are not closely aligned with the LA's own political objectives.

The need for a stronger alignment between national and local energy policy agendas is underlined by this paper, to ensure that central government policy does not inhibit LAs from playing an active energy governance role. This is on the basis that whilst the executive powers of LAs play an important role in facilitating delivery of local energy projects, central government policy has a critical bearing on whether these materialise or not. One solution to this could be for LAs to establish an overarching Strategic Energy Body to offer a forum for the co-development and coordination of local energy plans between local actors, as well as an important interface between local and national energy stakeholders. The latter aspect could help LAs could communicate to central government the types of policies required to facilitate local energy initiatives.

This paper presents a piece of qualitative, exploratory research that highlights some valuable insights into how and why LAs have engaged with the ESCo model to deliver local energy projects. To complement this work a more systematic, quantitative research study could be undertaken that critically examines: the strength of its business case, the potential size of the LA ESCo market, and finally, the relative contribution this governance approach could make to UK's energy and climate change targets.

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Appendix A - list of interviews

Table 4: List of interviewees

Organisation	Position	Date	Interviewer	Code
Local Authority 'arm's length' ESCo	CEO	July 2010	MH	1
	Managing director	July 2010	RB	2
	Manager	Aug 2011	MH	3
	Managing director	Jan 2012	MH	4
Local Authority	Sustainability manager	June 2010	RB	5
	Chief executive (also executive director of an LA ESCo)	June 2010	RB	6

	Head of environment unit	July 2010	MH	7
	Sustainability/energy manager	July 2010	RB	8
	Principal designer & energy engineer	Aug 2010	RB	9
	Director of environmental services	Aug 2010	RB	10
	Energy manager	Aug 2010	RB	11
	Principal designer & energy engineer	Aug 2010	MH	12
	Director of sustainable development	Sept 2010	RB	13
	Head of sustainable development	Sept 2010	RB	14
	Head of sustainable development	Oct 2010	MH	15
	Head of decentralised energy delivery	March 2011	RB	16
	Chief executive	Jan 2012	MH	17
Private sector energy supply contracting ESCo	Sustainability project manager	Sept 2010	MH	18
	Director	Jan 2011	MH	19
	Emergent technology specialist	July 2011	MH	20
	Director	Aug 2011	MH	21
	Knowledge transfer partnership associate	Jan 2012	MH	22
Private sector energy supply contracting ESCo (Energy Utility owned or division of an Energy Utility)	Services manager	June 2010	RB	23
	Head of Community Energy	Oct 2010	MH	24
	Head of community energy	March 2011	RB	25
	Director of community energy	Sept 2011	MH	26
	Product development and energy services manager	Sept 2011	MH	27
	Business development director of community energy	Sept 2011	MH	28
	Business development director of community energy	Jan 2012	MH	29
	Head of energy solutions	Jan 2012	MH	30
	Business development manager of community energy	Jan 2012	MH	31

	Senior business manager commercial energy division	Jan 2012	MH	32
Community owned and run ESCos	Committee member	July 2011	MH	33
	Committee member	Aug 2011	MH	34
	Committee member	Feb 2012	MH	35
	Committee member	Feb 2012	MH	36
	Accountant	Feb 2012	MH	37
Consultancy or 'think tank'	Consultant (low carbon and local energy systems)	July 2010	RB	38
	Associate Director (low-carbon)	Jan 2011	MH	39
	Partner (low-carbon agriculture)	July 2011	MH	40
	Chief economist and Head of Fair markets (consumers)	Oct 2011	MH	41
Government department	Deputy Head of community-led policy making (energy)	Aug 2010	RB	42
	Head of new business and economics (housing)	June 2010	RB	43
	Policy Advisor (energy)	Aug 2011	MH	44
Trade association	Deputy Director (interest in district energy)	Dec 2010	RB	45
	Senior policy officer (interest in local government)	August 2010	RB	46
	Associate (interest in district energy)	July 2011	MH	47
Law firm	Partner	July 2011	MH	48
	Partner	Aug 2011	MH	49
Investment firm	Head of New Energy and Power Research	Sept 2010	MH	50
	Director of Sustainable Energy Finance	July 2011	MH	51
University	Senior Research Fellow - University	Sept 2010	MH	52
Regional Development Agency	Head of Environment & Project Leader of Energy Services Procurement Framework	Aug 2011	MH	53

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